Claims

1. A method for enhancing arteriogenesis and/or the growth of collateral arteries and/or other arteries from preexisting arteriolar connections comprising contacting organs, tissue or cells with transforming growth factor beta 1 (TGFβ1) and/or a nucleic acid molecule encoding said TGFβ1.

2. Use of transforming growth factor beta 1 (TGFβ1) and/or a nucleic acid molecule encoding said TGFβ1 for the preparation of a pharmaceutical composition for enhancing arteriogenesis and/or collateral growth of collateral arteries and/or other arteries from preexisting arteriolar connections.

3. The method of claim 1 or the use of claim 2, wherein the TGFβ1 is a recombinant TGFβ1.

4. The method of claims 1 or 3, further comprising contacting the organ, tissue or cell with a growth factor or cytokine.

5. The use of claims 2 or 3, wherein the pharmaceutical composition is designed to be administered in conjugation with a growth factor or cytokine.

6. The method of claim 4 or the use of claim 5, wherein said growth factor or cytokine is b-FGF, PDGF, TNF-α, IL-1, IL-6 or VEGF.

7. The method of any one of claims 1, 3, 4 or 6, comprising
   (a) obtaining cells, tissue or an organ from a subject;
   (b) introducing into said cells, tissue or organ a nucleic acid molecule encoding and capable of expressing TGFβ1 in vivo; and
   (c) reintroducing the cells, tissue or organ obtained in step (b) into the same subject or a different subject.

8. The method of any one of claims 1, 3, 4, 6 or 7 or the use of any one of claims 2, 3, 5 or 6, wherein the TGFβ1 is a derivative or functional equivalent substance.

9. The method or use of claim 8, wherein said derivative or functional equivalent substance is an antibody, (poly)peptide, nucleic acid, small organic compound, ligand, hormone, PNA or peptidomimetic.

10. The method of any one of claims 1, 3, 4, 6 to 9 or the use of any one of claims 2, 3, 5, 6, 8 or 9, wherein said method or said pharmaceutical composition is designed to be applied to a subject suffering from a vascular disease or a cardiac infarct or a stroke.

11. The method or the use of claim 10, wherein said vascular disease is arteriosclerosis and/or a hyperlipidemic condition, a coronary artery disease, cerebral occlusive disease, peripheral occlusive disease, visceral occlusive disease, renal artery disease, mesenterial arterial insufficiency or an ophtamic or retenal occlusion.

12. The method of any one of claims 1, 3, 4, 6 to 11 or the use of any one of claims 2, 3, 5, 6, 8 to 11, wherein said method or said pharmaceutical composition is designed to be applied to a subject during or after exposure to an agent or radiation or surgical treatment which damage or destroy arteries.

13. A method for the treatment of tumors comprising contacting organs, tissue or cells with an agent which suppresses arteriogenesis and/or the growth of collateral arteries and/or other arteries from preexisting arteriolar connections through inhibition of the biological activity of TGFβ1 as defined in any one of claims 1 to 12.

14. Use of an agent which suppresses the growth of collateral arteries and/or other arteries from preexisting arteriolar connections through the inhibition of the

biological activity of TGFβ1 as defined in any one of claims 1 to 12 for the preparation of a pharmaceutical composition for the treatment of tumors.

15. The method of claim 13 or the use of claim 14, wherein the agent inhibits the biological activity of TGFβ1 and/or inhibits an intracellular signal or signal cascade comprising SMAD proteins triggered in macrophages through the receptor for TGFβ1.

16. The method or the use of claim 15, wherein the agent blocks an interaction of the TGFβ1 and its receptor.

17. The method of any one of claims 13, 15 or 16 or the use of any one of claims 14 to 16, wherein the agent is derived from a class of substances as defined in claim 9.

18. The method or the use of claim 17, wherein the agent is designed to be expressed in vascular cells or cells surrounding preexisting arteriolar connections to a tumor.

19. The method of any one of claims 13 or 15 to 18 or the use of any one of claims 14 to 18, wherein the tumor is a vascular tumor.

20. The method or the use claim 19, wherein the tumor is selected form the group consisting of Colon Carcinoma, Sarcoma, Carcinoma in the breast, Carcinoma in the head/neck, Mesothelioma, Glioblastoma, Lymphoma and Meningeoma.

21. The use of any one of claims 2, 3, 5, 6, 8 to 11, 14 to 20, wherein the pharmaceutical composition is designed to be administered by intracoronary, intramuscular, intraarterial, intravenous, intraperitoneal or subcutenous routes.